Amendment to the Claims:

This listing of Claims will replace all prior versions of Claims in the application.

1. (Currently Amended) A method for converting a three-color image data set comprising C1, C2, and C3 colors into a four-color image data set comprising C1, C2, C3 and W colors, the method comprising:

dividing a color space comprising a C1, C2, C3, and W color point into a set of regions bounded by W and two of a group, said group comprising: C1, C2 and C3; and

determining a mapping from image data points in any one of said regions, said image data points comprising C1, C2 and C3 color values, to image data points comprising C1, C2, C3, and W; and

detecting image data points that are out-of-gamut;

~~effecting a change in~~**scaling only** the out-of-gamut image data points to produce ~~a~~**corresponding** color image data point~~s~~ that ~~is~~**are** within gamut range**, the scaling performed according to** ~~by applying~~ a scaling factor ~~including~~**that is determined according to** a ratio between the maximum allowed value and the maximum value of C1, C2, C3, and W.

2. (Original) The method of Claim 1 wherein the three colors C1, C2, and C3 comprise R, G and B.

3. (Original) The method of Claim 1 wherein the regions bounded by W and two of a group, said group comprising C1, C2 and C3 comprises triangles.

4. (Previously Presented) The method of Claim 1 wherein the determining of a mapping further comprises:

setting the white point in the four-color space to a desired value; and

calculating intermediate coefficients for the four colors using the desired white point.

5. (Previously Presented) The method of Claim 4 wherein said calculating of the intermediate coefficients further comprises solving the following matrix equation for the values Cr Cg Cb and Cw:

$$\begin{pmatrix} X_w \\ Y_w \\ Z_w \end{pmatrix} = \begin{pmatrix} x_r & x_g & x_b & x_w \\ y_r & y_g & y_b & y_w \\ z_r & z_g & z_b & z_w \end{pmatrix} \cdot \begin{pmatrix} Cr \\ Cg \\ Cb \\ Cw \end{pmatrix}$$

6. (Original) The method of Claim 4 wherein setting the white point further comprises setting the white point to adjust to different backlighting condition for target displays.

7. (Original) The method of Claim 4 wherein setting the white point further comprises setting the white point to adjust between difference between the white point of the source image data and the white point of the target display.

8. (Previously Presented) The method of Claim 4 wherein the determining of a mapping further comprises:

calculating the mapping to four color space from said intermediate coefficients with the following matrix:

$$\begin{pmatrix} R \\ G \\ B \\ W \end{pmatrix} = \begin{pmatrix} R1 & R2 & R3 \\ G1 & G2 & G3 \\ B1 & B2 & B3 \\ W1 & W2 & W3 \end{pmatrix} \cdot \begin{pmatrix} X \\ Y \\ Z \end{pmatrix}$$

9. (Original) The method of Claim 8 wherein calculating the mapping to four color space further comprises calculating source and destination colors for groups of known primaries and whitepoints, and numerically solving for the mapping that produce said known primaries.

10. (Previously Presented) The method of Claim 1 wherein said method further comprises:

detecting four color image data points that are out-of-gamut;

effecting a change as a function of the out-of-gamut coefficients to produce a color image

data point that is within gamut range.

11. (Original) The method of Claim 10 wherein said step of detecting out-of-gamut color image data points further comprises:

testing each color component of the image data point to see if the color component is out of range.

12. (Previously Presented) The method of Claim 11 wherein the step of effecting a change in only the out-of-gamut coefficients further comprises:

clamping the out-of-range color components to the maximum value allowed for the given component.

13. (Previously Presented) The method of Claim 11 wherein the step of effecting a change in only the out-of-gamut coefficients further comprises:

correcting all four colors by using the scaling factor.

14. (Cancelled)

15. (Currently Amended) An image system comprising:

a display for displaying a three-color image data set comprising C1, C2, and C3 colors converted into a four-color image data set comprising C1, C2, C3 and W colors; and

processing circuitry to divide a color space comprising a C1, C2, C3, and W color point into a set of non-overlapping regions bounded by W and two of a group, said group comprising: C1, C2 and C3 and to determine a mapping from image data points in any one of said regions, said image data points comprising C1, C2 and C3 color values, to image data points comprising C1, C2, C3, and W and

out-of-gamut detecting circuitry for detecting image data points that are out-of-gamut;

scaling circuitry for ~~effecting a change in~~**scaling** only the out-of-gamut image data points to produce ~~a~~**corresponding** color image data point**s** that ~~is~~**are** within gamut range**, the scaling performed according to** ~~by applying~~ a scaling factor ~~including~~**that is determined according to** a ratio between the maximum allowed value and the maximum value of C1, C2, C3, and W.

16. (Original) The image processing system of Claim 15 wherein the three colors C1, C2, and C3 comprise R, G and B.

17. (Original) The image processing system of Claim 15 wherein the regions bounded by W and two of a group, said group comprising C1, C2 and C3 comprises triangles.

18. (Original) The image processing system of Claim 15 wherein the processing circuitry is configured to set the white point in the four-color space to a desired value and calculate intermediate coefficients for the four colors using the desired white point.

19. (Previously Presented) The image processing system of Claim 15 wherein the processing circuitry is to calculate the intermediate coefficients using the following matrix equation for the values Cr Cg Cb and Cw:

$$\begin{pmatrix} X_w \\ Y_w \\ Z_w \end{pmatrix} = \begin{pmatrix} x_r & x_g & x_b & x_w \\ y_r & y_g & y_b & y_w \\ z_r & z_g & z_b & z_w \end{pmatrix} \cdot \begin{pmatrix} Cr \\ Cg \\ Cb \\ Cw \end{pmatrix}$$

20. (Original) The image processing system of Claim 19 wherein the processing circuitry is to set the white point to adjust to different backlighting condition for target displays.

21. (Original) The image processing system of Claim 19 wherein the processing circuitry is to set the white point to adjust between difference between the white point of the source image data and the white point of the target display.

22. (Original) The image processing system of Claim 21 wherein the processing circuitry is to calculate he mapping to four color space from said intermediate coefficients with the following matrix:

$$\begin{pmatrix} R \\ G \\ B \\ W \end{pmatrix} = \begin{pmatrix} R1 & R2 & R3 \\ G1 & G2 & G3 \\ B1 & B2 & B3 \\ W1 & W2 & W3 \end{pmatrix} \cdot \begin{pmatrix} X \\ Y \\ Z \end{pmatrix}$$

23. (Previously Presented) The image processing system of Claim 15 wherein the processing circuitry is to detect four color image data points that are out-of-gamut and effect a change as a function of the out-of-gamut coefficients to produce a color image data point that is within gamut range.

24. (Original) The image processing system of Claim 23 wherein the processing circuitry is to test each color component of the image data point to see if the color component is out of range.

25. (Original) The image processing system of Claim 24 wherein the processing circuitry is to clamp the out-of-range color components to the maximum value allowed for the given component.

26. (Original) The image processing system of Claim 25 wherein the processing circuitry is scale the color components of the out-of-gamut image data point with a ratio between the maximum allowed value and the maximum coefficients of the out-of-gamut image data point.

27. (Currently Amended) A method for scaling out-of-gamut colors when mapping first colored image data in a first three-color space to second colored image data into a second color space comprising more than three colors wherein one such more than three colors is white, the steps of said method comprising:

mapping said first colored image data to said second colored image data;

detecting any said second colored image data as being out-of-gamut in said second color space;

scaling **only** the color components of the out-of-gamut second colored image data**, the scaling performed according to** ~~with~~ a ratio between the maximum allowed value and the maximum coefficient of said out-of-gamut second colored image data.

28. (Previously Presented) The method of claim 27 wherein said scaling further comprises the step of looking up said scaling factor in an inverse look-up table.